

Performance of a Proposed Determinative Method for p-TSA in Rainbow Trout Fillet Tissue and Bridging the Proposed Method for Total Chloramine-T Residues in Rainbow Trout Fillet Tissue

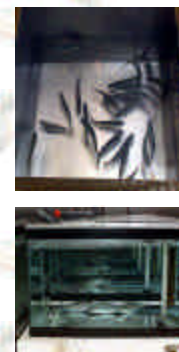
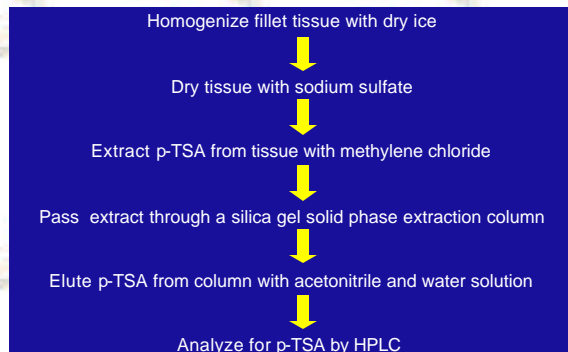
Meinertz, J.R., G.R. Stehly, W.H. Gingerich, and S.L. Greseth
USGS, Upper Midwest Environmental Sciences Center, La Crosse, Wisconsin 54603

Introduction

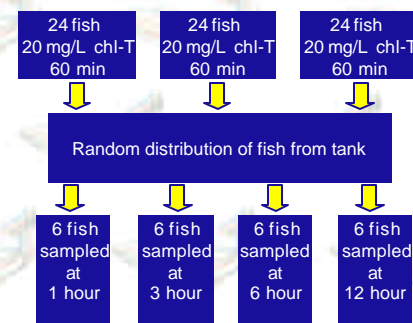
Bacterial gill disease(BGD) is a predominant disease of fish cultured in crowded rearing conditions and is responsible for substantial production losses on federal, state, and commercial hatcheries. Chloramine-T (chl-T) is a disinfectant that is effective in treating BGD. Legal use of chl-T as a therapeutic drug in fish culture depends on approval by the Food and Drug Administration (FDA). Data required for an approval include depletion of the chl-T marker residue (para-toluenesulfonamide, p-TSA) from edible fillet tissue of exposed fish. Before conducting a depletion study, a method for determining p-TSA in fillet tissue had to fulfill FDA accuracy and precision criteria and show acceptable performance when compared to a former method for determining chl-T residues in fish fillet tissue.



Extraction Method



Chl-T Exposure for Method Bridging



Objectives

- 1) Evaluate the method accuracy and precision with p-TSA fortified rainbow trout fillet tissue.
- 2) Evaluate the method precision with rainbow trout fillet tissue containing incurred p-TSA.
- 3) Bridge the current extraction method with a former chl-T residue method by mimicking the exposure of rainbow trout in the original chl-T total residue depletion study and comparing p-TSA concentrations in fillet tissue of fish exposed in this study with data from the original depletion study.

Objective 1 Results

Method accuracy and precision with fortified fillet tissue.

Nominal p-TSA concentration (ng/g)	n	Mean% recovery	% RSD
500	7	92.6	4.5
1000	7	93.4	2.5
2000	7	94.6	1.4

Objective 1 Conclusion

Method is accurate and precise with edible rainbow trout fillet tissue fortified with p-TSA at 0.5X, 1X, and 2X the expected 1000 ng/g tolerance limit.

Objective 2 Results

Method precision with incurred p-TSA in fillet tissue.

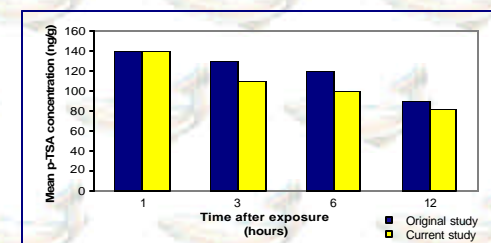
Fish precision identification	Mean p-TSA concentration (ng/g)	Method (% RSD)
Fish 1	1020	2.4
Fish 2	948	8.4
Fish 3	1090	7.2
Fish 4	1000	3.3
Fish 5	1050	0.8
Fish 6	1020	1.5

Objective 2 Conclusion

Method is precise with edible rainbow trout fillet tissue containing incurred p-TSA.

Objective 3 Results

Incurred p-TSA concentrations in the fillet tissue from fish exposed in the original study and the current study. Concentrations were not statistically different at $p < 0.05$.



Objective 3 Conclusion

The proposed method was successfully bridged to the former method used in the original depletion study. Concentration of p-TSA determined in the two studies were not statistically different.